PHILIP MORRIS U. S. A.

INTER-OFFICE CORRESPONDENCE

Richmond, Virginia

To: Mr. J. E. Wickham **Date:** April 10, 1989

From: Susan Laffoon

Subject: Comparison of Tar, Nicotine and Carbon Monoxide Deliveries For Market Sample #31: TITL versus Philip Morris

The tar, nicotine and carbon monoxide (CO) deliveries of 250 domestic cigarette brands were reported by the Tobacco Institute Testing Laboratory (TITL) in March, 1989 for Market Sample #31. Cigarettes tested by TITL were obtained from the retail market between mid-March and the first week of May, 1988. The TITL data from Market Sample #31 were compared with Philip Morris data from the May, 1988 Cigarette Information Report.

The average tar, nicotine and CO deliveries of all brands included in the comparative study are listed.

	Tar, mg/cigt.	Nicotine, mg/cigt.	CO, mg/cigt.
TITL	12.0	0.89	12.5
Philip Morris	11.3	0.86	11.4

Mr. R. M. Jones analyzed the data from Market Samples #30 and #31. Regression analyses were run to test for differences between and within laboratories. The following conclusions can be made from the results of the statistical analysis:[1]

1. A definite bias was observed between the two laboratories that was consistent for both Market Samples #30 and #31. There did not appear to be any differences between data sets within a laboratory.

2. The differences between TITL and Philip Morris in tar delivery for Market Sample #31 varied in both magnitude and direction. TITL averaged higher than Philip Morris in overall tar delivery. The Philip Morris data were higher than TITL for brands delivering less than 6.4 mg tar. The same relationship was seen for Market Sample #30.

3. As with tar, the differences between TITL and Philip Morris in nicotine delivery for Market Sample #31 varied in both magnitude and direction. Philip Morris data were higher than TITL for deliveries below 0.45 mg. nicotine. The same relationship was observed for Market Sample #30.

4. TITL averaged higher than Philip Morris in CO delivery for Market Sample #31. The bias was consistent in direction but varied in magnitude with CO level. The same relationship was observed for Market Sample #30.

It should be noted that differences in deliveries between TITL and Philip Morris began in 1986 (Market Sample #29) when TITL moved to a new laboratory. Prior to that time, both laboratories agreed favorably for tar, nicotine and CO deliveries.

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The average tar, nicotine and CO deliveries for Market Sample #31 in comparison to previous surveys are given in Table I. The average differences in the tar and nicotine deliveries by incremental tar ranges are given in Table II. The average differences in CO delivery between the two laboratories are given in Table III. The correlations of the tar, nicotine and CO deliveries of TITL and Philip Morris are shown in Graphs 1, 2 and 3, respectively.

The individual brand comparisons by manufacturer for tar, nicotine and CO deliveries are reported in Tables IV-X. Large differences observed between laboratories, other than those resulting from puff count, may be attributed to different sampling methods and the ability of Philip Morris to detect brand modifications.

Table XI lists the Philip Morris brands that have an advertised tar value which is lower than the tar delivery reported by TITL for Market Sample #31.

Twenty-three brands were added to Market Sample #31 and thirteen brands were deleted from this survey. Additions and deletions are reported in Table XII.

[1]Reference memo from R. M. Jones to Susan Laffoon, "Tar, Nicotine and CO Data Comparisons", dated March 30, 1989.

Susan Laffoon

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TABLE I

AVERAGE TAR, NICOTINE AND CO DELIVERIES FOR MARKET SAMPLE #31 AND PRIOR MARKET SAMPLES

	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
Market Sample	TITL	PM	TITL	PM	TITL	PM
27	11.3	11.1	0.89	0.92	11.5	11.4
28	11.6	11.7	0.90	0.93	11.7	11.3
29*	12.1	11.6	0.85	0.86	12.3	11.4
30*	11.9	11.3	0.89	0.84	12.3	11.3
31*	12.0	11.3	0.89	0.86	12.5	11.4

*Analyses performed at new location in Rockville, Maryland

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TABLE II

DIFFERENCES IN TAR AND NICOTINE DELIVERIES, AND PUFF COUNT IN INCREMENTS OF 5 MG TAR DELIVERY[1]

Tar Delivery Range mg/cigt.	N	Average Difference of TITL-PM		
		Tar Delivery	Nicotine Delivery	Puff Count
<0.5 - 5	31	-0.5	0.00	+0.2
6 - 10	63	+0.3	+0.02	+0.2
11 - 15	90	+0.9	+0.03	+0.1
16 - 20	55	+1.1	+0.04	+0.1
21 - 25	9	+2.1	+0.10	+0.1
26 and above	2	+3.0	+0.11	-0.2
OVERALL	250	+0.7	+0.03	+0.1
<0.5 - 15	184	+0.4	+0.02	+0.1
16 - 20	55	+1.1	+0.04	+0.1
21 and above	11	+2.3	+0.10	0

[1]The tar ranges are determined by TITL data.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE III

DIFFERENCES IN CO DELIVERY IN INCREMENTS OF 5 MG OF CO DELIVERY[1]

CO Delivery Range, mg/cigt.	N	Average Difference TITL-PM
<0.5 - 5	14	+0.5
6 - 10	54	+0.8
11 - 15	117	+1.2
16 - 20	62	+1.4
21 and above	3	+0.9
OVERALL	250	+1.1

[1]The CO ranges are determined by TITL data.

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TABLE IV

PHILIP MORRIS

Brand	Tar, mg/cigt. Advertised	PM Target	TITL	PM
Alpine KFMSP[1]	15	16.0	16.9	15.4
B&H KFHP	No Ads	14.5	15.4	14.6
B&H 100FHP	No Ads	16.0	16.6	15.7
B&H 100FMHP	No Ads	16.0	16.6	16.2
B&H 100FSP	16	16.0	16.6	16.0
B&H 100FMSP	16	16.0	16.8	15.6
B&H Deluxe Ultra Lights 100FHP	6	6.0	5.0	5.2
B&H Deluxe Ultra Lights 100FMHP	6	6.0	5.2	5.5
B&H Lights 100FSP	10	10.5	10.7	10.2
B&H Lights 100FMSP	10	10.5	10.7	10.3
B&H Multifilter KFSP	No Ads	11.5	11.2	11.3
Cambridge Full Flavor KFSP	16	16.0	17.1	15.4
Cambridge Full Flavor 100FSP	16	16.0	17.2	15.7
Cambridge Lights KFSP	12	12.0	12.3	11.2
Cambridge Lights KFMSP	12	12.0	11.9	11.3
Cambridge Lights 100FSP	12	12.0	12.0	11.2
Cambridge Lights 100FMSP	12	12.0	11.9	11.1
Cambridge Ultra Lights 100FSP	5	5.0	4.7	4.8
English Ovals KNFHP	No Ads	26.0	23.8	21.6
Marlboro KFHP	No Ads	16.0	17.0	16.0
Marlboro KFSP	16	16.0	17.4	16.1
Marlboro KFMSP[1]	17	16.0	16.6	15.2
Marlboro 100FHP	16	16.0	17.0	16.0
Marlboro 100FSP	16	16.0	17.1	16.1
Marlboro 25's KFSP	16	16.0	17.2	16.5
Marlboro Lights KFHP	11	11.0	11.0	10.5
Marlboro Lights KFMHP	10	10.0	10.2	9.6
Marlboro Lights KFSP	10	11.0	11.2	10.6
Marlboro Lights KFMSP	10	10.0	9.9	10.5
Marlboro Lights 100FHP	10	11.0	10.8	10.7
Marlboro Lights 100FMHP	10	10.0	10.2	9.4
Marlboro Lights 100FSP	10	11.0	11.0	10.8
Marlboro Lights 100FMSP	No Ads	10.0	10.9	9.9
Marlboro Lights 25's KFSP	10	11.0	11.2	10.5
Marlboro Red 100FHP	No Ads	16.0	16.4	16.0
Marlboro Red 100FSP	No Ads	16.0	16.5	NA
Merit KFHP	8	8.0	7.8	7.7
Merit KFSP	8	8.0	7.6	7.6
Merit KFMSP	8	8.0	7.7	7.6
Merit 100FSP	10	10.0	10.0	9.9
Merit 100FMSP	9	10.0	10.1	9.8
Merit Ultra Lights KFSP	5	5.0	4.4	5.1
Merit Ultra Lights KFMSP	5	5.0	4.5	5.1
Merit Ultra Lights 100FSP	6	6.0	5.3	5.6
Merit Ultra Lights 100FMSP	5	6.0	6.0	5.9
Parliament Lights KFHP	No Ads	9.0	9.5	9.1
Parliament Lights KFSP	9	9.0	9.1	9.2
Parliament Lights 100FSP	12	11.5	12.0	11.8
PM Commander KNFSP	No Ads	23.0	26.3	23.2
PM International 100FHP	No Ads	16.0	16.8	16.4
PM International 100FMHP	No Ads	16.0	16.9	16.6

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE IV (cont.)

PHILIP MORRIS

Brand	Advertised	Tar, mg/cigt. PM Target	TITL	PM
Players RNFHP	No Ads	22.0	25.2	23.0
Players KFHP	No Ads	12.0	11.7	11.1
Players KFMHP	No Ads	12.0	11.9	11.2
Players 100FHP	No Ads	14.0	13.9	13.4
Players 100FMHP	No Ads	14.0	14.0	13.2
Players Lights 25's KFSP	10	10.0	10.0	9.4
Players Lights 25's KFMSP	10	10.0	10.0	9.0
Players Lights 25's 100FSP	12	12.0	11.9	11.4
Players Lights 25's 100FMSP	12	12.0	11.4	10.9
Saratoga 120FHP	No Ads	14.5	14.7	14.4
Saratoga 120FMHP	No Ads	14.5	14.7	13.8
Va Slims 100FSP	14	14.5	15.3	14.1
Va Slims 100FMSP	14	14.5	15.1	13.9
Va Slims Lights 100FHP	8	9.0	8.8	8.7
Va Slims Lights 100FMHP	8	9.0	8.5	8.7
Va Slims Lights 120FHP	14	14.0	14.5	13.8
Va Slims Lights 120FMHP	14	14.0	14.7	13.5

[1]Alpine KFMSP and Marlboro KFMSP cigarettes have been reengineered. TITL data may be high due to testing of a mixed sample.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE V

PHILIP MORRIS

Brand	Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM
Alpine KFMSP[1]	1.10	1.05	15.4	15.8
B&H KFHP	1.26	1.20	12.6	11.5
B&H 100FHP	1.18	1.08	16.5	14.4
B&H 100FMHP	1.17	1.20	16.4	14.8
B&H 100FSP	1.19	1.20	16.2	15.7
B&H 100FMSP	1.20	1.16	16.2	15.3
B&H Deluxe Ultra Lights 100FHP	0.44	0.43	6.2	5.7
B&H Deluxe Ultra Lights 100FMHP	0.47	0.44	6.2	6.1
B&H Lights 100FSP	0.83	0.83	13.0	11.7
B&H Lights 100FMSP	0.81	0.79	12.0	11.2
B&H Multifilter KFSP	0.85	0.85	10.8	10.8
Cambridge Full Flavor KFSP	1.09	1.04	16.1	14.8
Cambridge Full Flavor 100FSP	1.17	1.08	16.0	15.0
Cambridge Lights KFSP	0.85	0.82	12.7	11.3
Cambridge Lights KFMSP	0.84	0.82	12.1	11.4
Cambridge Lights 100FSP	0.87	0.84	14.5	13.4
Cambridge Lights 100FMSP	0.86	0.83	14.6	13.0
Cambridge Ultra Lights 100FSP	0.41	0.38	6.6	5.0
English Ovals KNFHP	1.87	1.71	15.6	12.4
Marlboro KFHP	1.14	1.12	15.2	13.6
Marlboro KFSP	1.17	1.13	16.9	14.9
Marlboro KFMSP[1]	1.09	1.04	15.6	14.9
Marlboro 100FHP	1.22	1.14	16.9	15.3
Marlboro 100FSP	1.22	1.19	16.5	16.6
Marlboro 25's KFSP	1.13	1.13	15.9	14.8
Marlboro Lights KFHP	0.82	0.79	12.4	11.4
Marlboro Lights KFMHP	0.78	0.74	11.2	10.0
Marlboro Lights KFSP	0.83	0.80	12.2	11.8
Marlboro Lights KFMSP	0.77	0.83	10.4	11.8
Marlboro Lights 100FHP	0.85	0.85	12.3	12.3
Marlboro Lights 100FMHP	0.81	0.76	11.2	10.7
Marlboro Lights 100FSP	0.85	0.85	13.0	12.0
Marlboro Lights 100FMSP	0.86	0.77	12.0	10.8
Marlboro Lights 25's KFSP	0.80	0.74	12.4	11.6
Marlboro Red 100FHP	1.19	1.14	16.3	15.3
Marlboro Red 100FSP	1.19	NA	17.0	NA
Merit KFHP	0.60	0.60	9.8	9.7
Merit KFSP	0.59	0.60	9.8	9.1
Merit KFMSP	0.58	0.59	10.0	9.0
Merit 100FSP	0.80	0.79	11.8	10.6
Merit 100FMSP	0.78	0.76	12.0	11.3
Merit Ultra Lights KFSP	0.43	0.43	5.5	4.8
Merit Ultra Lights KFMSP	0.42	0.43	5.9	5.5
Merit Ultra Lights 100FSP	0.50	0.48	7.4	6.4
Merit Ultra Lights 100FMSP	0.53	0.51	8.2	7.0
Parliament Lights KFHP	0.72	0.70	10.3	9.4
Parliament Lights KFSP	0.71	0.71	10.4	9.0
Parliament Lights 100FSP	0.95	0.97	12.7	12.5
PM Commander KNFSP	1.61	1.49	16.2	14.0
PM International 100FHP	1.15	1.14	15.6	14.4
PM International 100FMHP	1.08	1.08	16.2	14.8

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE V (cont.)

PHILIP MORRIS

Brand	Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM
Players RNFHP	1.74	1.62	15.9	12.5
Players KFHP	0.83	0.80	12.2	11.7
Players KFMHP	0.82	0.82	12.3	11.7
Players 100FHP	0.98	0.96	12.9	11.9
Players 100FMHP	0.98	0.98	12.7	11.4
Players Lights 25's KFSP	0.72	0.73	11.1	10.3
Players Lights 25's KFMSP	0.71	0.68	11.1	10.5
Players Lights 25's 100FSP	0.86	0.89	14.1	11.8
Players Lights 25's 100FMSP	0.81	0.80	13.7	12.6
Saratoga 120FHP	1.07	1.09	14.8	12.8
Saratoga 120FMHP	1.07	1.02	14.8	13.9
Va Slims 100FSP	1.07	1.02	13.8	12.8
Va Slims 100FMSP	1.06	1.01	13.9	13.3
Va Slims Lights 100FHP	0.70	0.72	9.3	8.8
Va Slims Lights 100FMHP	0.69	0.69	9.2	8.4
Va Slims Lights 120FHP	1.07	1.05	14.9	14.2
Va Slims Lights 120FMHP	1.08	1.03	14.8	13.5

[1]Alpine KFMSP and Marlboro KFMSP cigarettes have been reengineered. TITL data may be high due to testing of a mixed sample.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE VI

R. J. REYNOLDS

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
Bright 100FMSP	6.0	6.3	0.44	0.44	10.3	9.6
Camel RNFSP	22.0	20.0	1.39	1.32	14.2	12.7
Camel KFHP	16.8	15.4	1.06	0.99	16.6	16.6
Camel KFSP	15.6	14.0	1.01	0.98	15.4	14.1
Camel 100FSP	17.5	NA	1.06	NA	18.7	NA
Camel Lights KFHP	9.9	9.1	0.64	0.61	11.8	10.2
Camel Lights KFSP	8.8	8.6	0.65	0.64	11.3	11.3
Camel Lights 100FSP	11.4	10.9	0.81	0.76	15.0	13.9
Century 25's KFSP	15.3	14.1	0.99	0.93	17.8	16.7
Century 25's 100FSP	17.5	16.3	1.13	1.12	20.9	19.9
Century Lights 25's KFSP[1]	9.7	8.9	0.70	0.67	11.8	9.2
Century Lights 25's 100FSP	11.9	11.1	0.89	0.85	13.4	12.9
Century Lights 25's 100FMSP	11.5	NA	0.84	NA	13.2	NA
Doral Full Flavor KFSP[2]	17.4	15.2	0.92	1.06	19.6	18.1
Doral Full Flavor 100FSP[2]	14.8	12.9	0.84	0.85	17.2	15.6
Doral Lights KFSP[3]	12.1	9.5	0.67	0.75	14.5	9.1
Doral Lights KFMSP[3]	11.7	9.4	0.64	0.74	14.0	9.7
Doral Lights 100FSP[3]	11.3	10.4	0.70	0.85	12.9	11.3
Doral Lights 100FMSP[3]	12.1	10.8	0.73	0.88	13.7	9.4
Doral Ultra Lights 100FSP[3]	6.7	6.0	0.48	0.55	11.7	6.3
Magna KFHP	14.1	12.8	0.90	0.84	16.3	14.2
Magna KFSP	13.9	12.4	0.91	0.84	14.9	14.7
Magna Lites KFSP	9.1	8.5	0.64	0.60	13.7	12.3
More 120FSP	16.5	16.4	1.19	1.25	21.5	20.5
More 120FMSP	16.6	16.5	1.28	1.33	22.0	21.2
More Lights 100FHP	10.0	9.5	0.78	0.75	10.7	10.3
More Lights 100FMHP	9.0	9.3	0.69	0.67	10.2	9.6
More Lights 120FSP	12.9	NA	0.98	NA	20.2	NA
More Lights 120FMSP	12.2	NA	0.99	NA	19.6	NA
Now KFHP	<0.5	NA	<0.05	NA	<0.5	NA
Now KFSP	1.0	1.5	0.14	0.14	2.3	1.6
Now KFMSP	1.1	1.8	0.13	0.17	2.3	2.5
Now 100FHP	<0.5	NA	<0.05	NA	<0.5	NA
Now 100FSP	1.9	2.3	0.21	0.20	3.1	2.6
Now 100FMSP	2.5	3.0	0.26	0.25	4.3	4.2
Ritz 100FHP	10.4	9.2	0.78	0.76	11.5	8.7
Ritz 100FMHP	11.1	10.7	0.81	0.75	11.5	11.0
Salem KFMSP	15.9	15.6	1.04	1.07	16.7	16.4
Salem 100FMSP	16.8	15.4	1.19	1.13	16.1	15.3
Salem Lights KFMSP	9.8	9.2	0.72	0.69	12.6	12.1
Salem Lights 100FMHP	11.3	NA	0.86	NA	11.6	NA
Salem Lights 100FMSP	9.3	9.1	0.74	0.70	11.1	10.9
Salem Slim Lights 100FMHP	9.5	9.0	0.77	0.69	10.2	9.7
Salem Ultra Lights KFMSP	4.9	5.1	0.43	0.41	7.7	7.5
Salem Ultra Lights 100FMSP	5.1	5.5	0.45	0.44	8.0	7.1
Vantage KFSP	10.5	10.1	0.75	0.74	13.5	12.5
Vantage KFMSP	10.0	9.7	0.69	0.68	12.5	11.3
Vantage 100FSP	8.8	8.8	0.63	0.62	12.5	11.6
Vantage 100FMSP	8.3	8.4	0.61	0.59	12.7	11.9
Vantage Ultra Lights KFSP	5.5	5.6	0.47	0.44	8.0	7.3
Vantage Ultra Lights 100FSP	5.8	5.9	0.50	0.47	9.5	8.8

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE VI (cont.)

R. J. REYNOLDS

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
Winston KFHP	16.8	15.0	1.06	1.00	16.9	14.8
Winston KFSP	17.1	16.0	1.13	1.11	16.3	15.6
Winston 100FSP	16.9	15.8	1.06	1.02	18.6	16.6
Winston Lights KFHP	9.7	9.5	0.63	0.63	11.7	11.1
Winston Lights KFSP	10.7	10.1	0.75	0.71	13.2	11.7
Winston Lights 100FHP	9.9	8.8	0.72	0.64	11.8	10.2
Winston Lights 100FSP	11.4	11.1	0.81	0.81	13.4	12.4
Winston Ultra Lights KFSP	5.5	6.0	0.46	0.46	8.5	8.3
Winston Ultra Lights 100FSP	5.3	5.5	0.47	0.43	9.0	8.3

NA = Due to low sales, Philip Morris does not routinely test this brand.

[1] = The tar and CO deliveries of Century Lights 25's KFSP cigarettes decreased as a result of an increase in filter ventilation.

[2] = The blend of Doral Full Flavor KS and 100 cigarettes was changed, resulting in an increased total alkaloid content and a higher nicotine delivery.

[3] = The blend of Doral Lights KS and 100 (plain and menthol) and Doral Ultra Lights 100 cigarettes was changed, resulting in an increased total alkaloid content and a higher niocitne delivery. An increase in filter ventilation resulted in lower tar and CO deliveries for these brands.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE VII

LORILLARD

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
Harley Davidson KFSP	14.1	12.6	0.98	0.84	16.3	15.0
Kent Golden Lights KFHP	8.8	8.4	0.78	0.77	9.7	8.5
Kent Golden Lights KFSP	8.5	8.4	0.74	0.71	9.6	9.6
Kent Golden Lights KFMSP	8.3	7.9	0.75	0.69	9.1	8.6
Kent Golden Lights 100FHP	10.2	9.0	0.91	0.81	11.2	8.9
Kent Golden Lights 100FSP	9.6	9.5	0.86	0.87	10.5	9.5
Kent Golden Lights 100FMSP	9.3	9.9	0.85	0.88	10.0	9.8
Kent KFHP	11.3	10.6	0.86	0.79	12.9	11.7
Kent KFSP	12.0	11.8	0.88	0.87	13.9	12.7
Kent 100FSP	13.6	12.4	1.02	0.92	14.7	12.7
Kent 100FMSP	14.0	13.8	1.04	1.08	14.4	14.0
Kent III KFSP	3.4	3.7	0.35	0.32	4.3	2.8
Kent III 100FHP	5.0	6.0	0.50	0.53	6.8	6.6
Kent III 100FSP	4.7	5.2	0.45	0.43	6.6	5.7
Max 120FSP	17.1	16.3	1.34	1.38	17.7	15.8
Max 120FMSP	17.2	16.3	1.38	1.37	17.0	15.6
Newport KFMHP	15.7	14.6	1.17	1.15	16.5	16.2
Newport KFMSP	17.2	16.3	1.26	1.22	18.3	17.2
Newport 100FMHP	19.2	18.2	1.46	1.45	19.4	18.0
Newport 100FMSP	19.3	17.6	1.47	1.38	19.4	18.7
Newport 25's KFMSP	17.2	15.7	1.28	1.22	18.2	17.0
Newport 25's 100FMSP	19.5	17.9	1.48	1.36	19.8	18.1
Newport Lights KFMHP	8.6	8.3	0.73	0.74	9.5	8.0
Newport Lights KFMSP	8.3	8.5	0.75	0.73	9.1	9.7
Newport Lights 100FMHP	9.2	8.8	0.84	0.82	9.9	8.6
Newport Lights 100FMSP	9.0	8.9	0.83	0.78	9.5	8.2
Newport Stripes 100FHP	12.3	11.1	0.94	0.89	16.6	13.4
Newport Stripes 100FMHP	12.2	11.1	0.91	0.87	16.5	13.5
Newport Stripes Slim Lights 100FMHP	9.3	8.2	0.76	0.72	11.4	10.4
Old Gold Straights KNFSP	26.9	24.0	1.89	1.80	18.7	17.6
Old Gold KFSP	16.8	15.0	1.24	1.16	18.1	16.2
Old Gold 100FSP	19.7	18.2	1.50	1.48	19.6	18.8
Old Gold Lights KFSP	9.3	8.5	0.81	0.75	10.9	9.7
Old Gold Lights 100FSP	12.3	12.2	0.91	0.97	17.0	16.3
Satin 100FSP	11.4	10.5	0.97	0.90	13.1	11.8
Satin 100FMSP	11.4	10.8	0.97	0.93	13.3	12.5
Spring 100FMSP	19.3	18.5	1.49	1.48	19.0	18.0
Triumph KFSP	3.1	4.3	0.32	0.38	3.8	3.7
Triumph KFMSP	3.5	4.3	0.34	0.38	4.3	4.1
Triumph 100FSP	5.3	5.8	0.50	0.51	7.4	5.6
Triumph 100FMSP	5.4	5.6	0.52	0.51	7.5	5.7
True KFSP	5.1	5.1	0.48	0.47	6.4	5.6
True KFMSP	4.9	5.2	0.46	0.46	6.1	6.2
True 100FSP	6.7	6.7	0.61	0.62	7.4	7.5
True 100FMSP	6.7	7.4	0.61	0.66	7.3	7.3

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE VIII

BROWN & WILLIAMSON

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
Belair KFMSP	10.7	10.2	0.84	0.81	9.8	8.9
Belair 100FMSP	8.8	8.4	0.67	0.62	9.1	7.8
Capri 100FHP	9.2	8.5	0.78	0.72	6.4	5.9
Capri 100FMHP	8.9	9.1	0.73	0.62	6.0	4.3
Falcon Lights KFSP	11.2	10.7	0.77	0.73	11.2	10.6
Falcon Lights KFMSP	10.2	9.5	0.78	0.76	11.9	11.2
Falcon Lights 100FSP	12.1	11.6	0.85	0.83	14.8	13.9
Falcon Lights 100FMSP	8.9	8.3	0.73	0.64	11.0	9.9
Kool RNFMSP	21.5	19.5	1.36	1.26	14.5	14.4
Kool KFMHP	16.2	14.4	1.12	1.01	16.4	15.6
Kool KFMSP	16.8	15.7	1.14	1.10	16.8	15.1
Kool Super Longs 100FMSP	16.7	15.5	1.25	1.15	17.0	16.0
Kool Lights KFMSP	8.2	7.7	0.69	0.65	9.0	8.6
Kool Lights 100FMSP	8.5	8.6	0.73	0.73	10.0	9.7
Kool Milds KFMHP	11.6	10.5	0.88	0.80	11.3	10.5
Kool Milds KFMSP	12.3	11.3	0.93	0.86	13.1	12.0
Kool Milds 100FMSP	12.0	11.1	0.95	0.88	12.6	12.2
Kool Ultra KFMSP	2.2	2.9	0.21	0.25	2.7	1.8
Kool Ultra 100FMSP	5.0	5.4	0.45	0.44	5.2	4.3
Raleigh KNFSP	23.8	21.0	1.40	1.30	16.6	16.7
Raleigh KFSP	15.5	14.0	0.97	0.89	14.7	13.6
Raleigh 100FSP	15.5	14.3	0.99	0.92	16.0	14.5
Raleigh Lights KFSP	11.4	10.5	0.87	0.86	13.1	12.1
Raleigh Lights 100FSP	12.2	11.5	0.94	0.88	14.3	13.2
Richland KFSP	16.3	16.3	1.13	1.17	16.0	15.1
Richland KFMSP	16.4	14.5	1.05	0.95	16.1	13.3
Richland 100FSP	16.6	15.8	1.23	1.22	17.3	15.6
Richland 100FMSP	16.7	NA	1.15	NA	17.1	NA
Richland Lights KFSP	11.7	NA	0.90	NA	13.5	NA
Richland Lights 100FSP	12.1	10.9	0.90	0.84	14.2	14.2
Richland 25's KFSP	16.6	15.3	1.18	1.14	15.8	14.9
Richland 25's KFMSP	16.2	14.8	1.09	1.05	15.6	15.2
Richland 25's 100FSP	17.0	16.5	1.28	1.23	17.3	15.0
Richland 25's 100FMSP	16.0	NA	1.16	NA	16.3	NA
Richland Lights 25's KFSP	11.5	11.4	0.89	0.90	12.7	12.2
Richland Lights 25's 100FSP	12.4	11.7	0.94	0.91	14.0	13.7
Viceroy KFSP	15.3	14.2	0.97	0.94	14.5	13.1
Viceroy Super Long 100FSP	15.9	15.2	1.14	1.08	15.1	13.4
Viceroy Lights KFSP	11.3	10.6	0.88	0.85	13.1	11.2
Viceroy Lights 100FSP	11.9	11.5	0.92	0.89	14.1	12.6

NA = Due to low sales, Philip Morris does not routinely test this brand.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE IX

AMERICAN BRANDS

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
American Lights KFSP	11.9	11.9	0.91	0.89	12.9	10.4
American Lights 100FSP	13.3	11.0	1.08	0.87	13.9	10.7
Carlton KFHP	<0.5	<0.5	<0.05	<0.05	<0.5	<0.5
Carlton KFSP	1.3	2.0	0.15	0.17	2.4	2.0
Carlton KFMSP	0.6	1.2	0.09	0.09	1.4	1.4
Carlton 100FHP	0.7	1.4	0.10	0.08	1.1	0.8
Carlton 100FMHP	0.6	1.5	0.10	0.10	1.0	0.7
Carlton 100FSP	3.4	3.7	0.35	0.33	4.6	4.0
Carlton 100FMSP	4.5	5.1	0.42	0.40	6.4	5.7
Carlton 120FSP	6.5	5.8	0.62	0.52	5.6	4.4
Carlton 120FMSP	6.2	6.1	0.62	0.57	5.5	4.6
Herbert Tareyton KNFSP	25.1	21.9	1.58	1.43	17.8	14.2
Lucky Strike RNFSP	24.4	23.1	1.52	1.49	16.5	14.9
Lucky Strike KFHP	12.1	10.7	0.92	0.85	12.8	11.9
Lucky Strike KFSP	11.8	11.5	0.89	0.90	12.6	11.5
Lucky Strike 100FSP	11.9	10.9	0.96	0.90	12.7	10.6
Lucky Strike 100FMSP	11.8	11.0	0.96	0.93	12.3	11.4
Lucky Strike Lights KFSP	8.4	7.6	0.68	0.64	10.2	7.3
Lucky Strike Lights 100FSP	8.9	9.2	0.74	0.76	10.0	8.8
Malibu KFSP	16.4	16.8	1.18	1.21	13.6	12.5
Malibu KFMSP	17.2	15.5	1.24	1.17	14.8	11.6
Malibu 100FSP	13.9	10.8	1.10	0.95	13.4	9.1
Malibu 100FMSP	11.6	11.5	0.94	0.97	12.5	10.8
Malibu Lights KFSP	10.2	9.1	0.79	0.74	10.8	8.4
Malibu Lights 100FSP	9.1	9.3	0.75	0.81	10.6	10.7
Pall Mall KNFSP	24.9	22.2	1.64	1.51	16.6	14.1
Pall Mall 25's KNFSP	24.7	NA	1.64	NA	16.5	NA
Pall Mall 100FSP	17.0	16.1	1.28	1.22	17.1	15.4
Pall Mall Light Low Tar 100FMSP	13.3	NA	1.08	NA	13.1	NA
Pall Mall Light 100FSP	10.3	9.4	0.84	0.77	12.0	12.6
Pall Mall Red KFSP	13.6	13.0	1.02	0.99	12.6	11.9
Pall Mall Red 100FSP	13.8	NA	1.07	NA	14.0	NA
Pall Mall Red Lights KFSP	10.3	NA	0.81	NA	10.7	NA
Pall Mall Red Lights 100FSP	11.1	NA	0.88	NA	12.2	NA
Silva Thin 100FHP	12.2	10.8	0.97	0.87	12.5	9.1
Silva Thin 100FMHP	11.1	11.4	0.90	0.97	11.7	10.0
Silva Thin 100FSP	11.7	10.8	0.98	0.87	10.0	9.7
Silva Thin 100FMSP	12.3	11.4	1.05	0.97	10.5	10.4
Tall 120FSP	20.4	19.0	1.64	1.55	20.2	17.7
Tall 120FMSP	18.0	17.2	1.57	1.50	16.5	17.1
Tareyton KFSP	14.3	13.5	0.98	1.01	15.9	14.9
Tareyton 100FSP	14.1	12.7	1.02	0.96	16.8	15.6
Tareyton Light KFSP	5.2	4.9	0.44	0.40	6.0	4.8
Tareyton Long Lights 100FSP	8.1	8.4	0.68	0.69	8.8	8.8

NA = Due to low sales, Philip Morris does not routinely test this brand.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE X

LIGGETT GROUP

Brand	Tar, mg/cigt.		Nicotine, mg/cigt.		CO, mg/cigt.	
	TITL	PM	TITL	PM	TITL	PM
Chesterfield RNFSP	20.0	17.4	1.30	1.19	13.3	13.3
Chesterfield KNFSP	24.2	23.3	1.65	1.57	15.3	13.6
Eve Slim Lights 100FHP	12.8	11.7	1.03	0.95	11.0	10.7
Eve Slim Lights 100FMHP	12.6	11.7	1.00	0.93	10.8	10.1
Eve Lights 120FHP	13.0	12.7	1.12	1.10	11.6	10.6
Eve Lights 120FMHP	13.5	13.3	1.17	1.11	12.0	10.8
L&M KFSP	13.7	12.4	1.08	1.06	12.9	12.2
L&M Super Kings 100FSP	13.9	12.8	1.12	1.00	14.2	13.1
L&M Long Lights 100FSP	7.8	8.1	0.80	0.75	6.3	4.7
L&M Lights 30's 100FSP	12.6	NA	1.06	NA	10.7	NA
Lark KFSP	14.3	12.7	1.11	0.98	13.3	13.2
Lark 100FSP	14.7	13.4	1.22	1.06	14.0	14.3
Lark Lights KFSP	13.4	12.4	1.03	0.98	13.3	12.0
Lark Light 100FSP	13.9	12.8	1.15	1.04	14.5	14.3
St Moritz 100FSP	14.9	13.0	1.08	1.07	15.5	15.1
St Moritz 100FMSP	14.9	13.5	0.96	1.02	17.1	14.0

NA = Due to low sales, Philip Morris does not routinely test this brand.

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE XI

ADVERTISED TAR DELIVERY VERSUS TITL TAR DELIVERY FOR MARKET SAMPLE #31

Brand	Tar, mg/cigt.	
	Advertised	TITL
Alpine KFMSP	15	16.9
B & H 100FSP	16	16.6
B & H 100FMSP	16	16.8
B & H Lights 100FSP	10	10.7
B & H Lights 100FMSP	10	10.7
Cambridge Full Flavor KFSP	16	17.1
Cambridge Full Flavor 100FSP	16	17.2
Marlboro KFSP	16	17.4
Marlboro 100FHP	16	17.0
Marlboro 100FSP	16	17.1
Marlboro 25's KFSP	16	17.2
Marlboro Lights KFSP	10	11.2
Marlboro Lights 100FHP	10	10.8
Marlboro Lights 100FSP	10	11.0
Marlboro Lights 25's KFSP	10	11.2
Merit 100FMSP	9	10.1
Merit Ultra Lights 100FMSP	5	6.0
Va. Slims 100FSP	14	15.3
Va. Slims 100FMSP	14	15.1
Va. Slims Lights 100FHP	8	8.8
Va. Slims Lights 100FMHP	8	8.5
Va. Slims Lights 120FHP	14	14.5
Va. Slims Lights 120FMHP	14	14.7

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE XII

BRANDS ADDED TO MARKET SAMPLE #31

PHILIP MORRIS

Cambridge Ultra Lights 100FSP
Marlboro Lights KFMHP
Marlboro Lights 100FMHP
Marlboro Red 100FHP
Marlboro Red 100FSP

R. J. REYNOLDS

Now 100FHP

LORILLARD

Harley Davidson KFSP
Newport Stripes 100FHP
Newport Stripes 100FMHP
Newport Stripes Slim Lights 100FMHP

BROWN & WILLIAMSON

Richland KFSP
Richland KFMSP
Richland 100FSP
Richland 100FMSP
Richland Lights KFSP
Richland Lights 100FSP

AMERICAN BRANDS

American Lights KFSP
American Lights 100FSP
Malibu KFSP
Malibu KFMSP
Pall Mall Red Lights KFSP
Pall Mall Red Lights 100FSP

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

TABLE XII (cont.)

BRANDS DELETED FROM MARKET SAMPLE #31

PHILIP MORRIS

B & H Deluxe Lights 100FHP
B & H Deluxe Lights 100FMHP
P.M. Blues KFSP
P.M. Blues 100FSP
Va. Slims Ultra Lights 100FHP
Va. Slims Ultra Lights 100FMHP

R. J. REYNOLDS

Doral Full Flavor KFHP

BROWN & WILLIAMSON

Eli Cutter KFSP
Eli Cutter Lights KFSP
Fiesta KFSP

AMERICAN BRANDS

Pall Mall Unfiltered Lights KNFSP

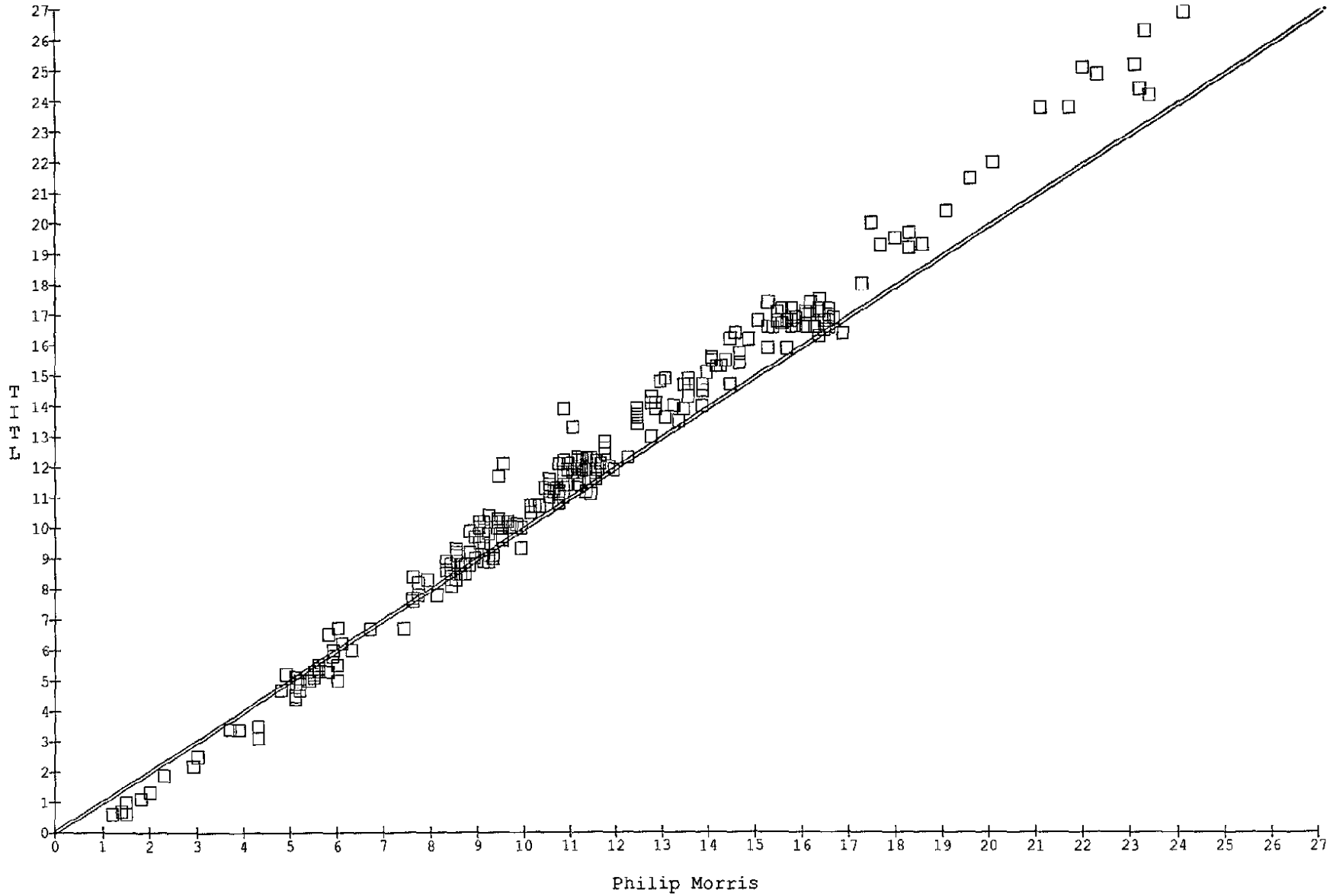
LIGGETT GROUP

L & M KFHP

Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

Graph 1

TAR DELIVERY: TITL vs Philip Morris
Market Sample #31



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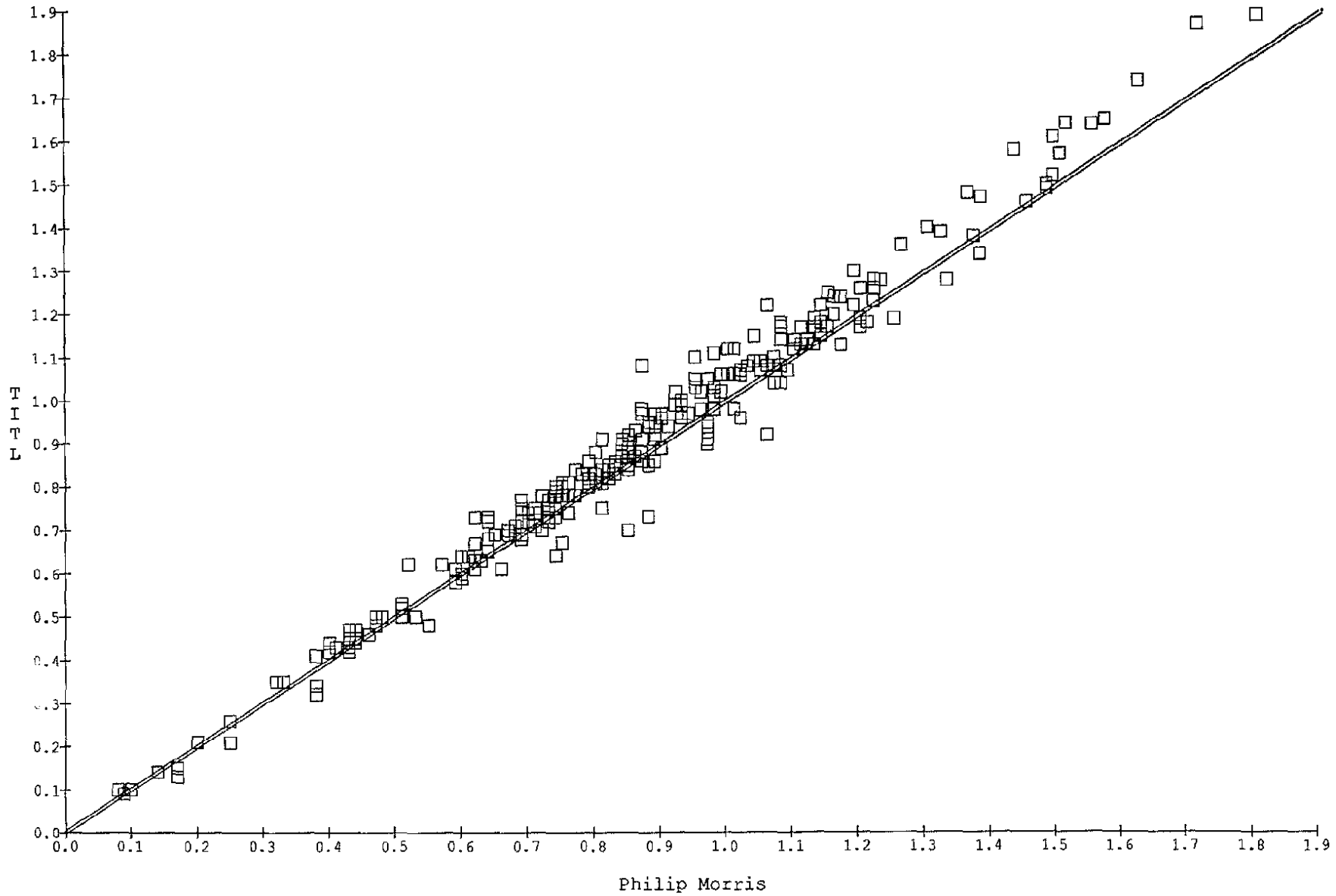
Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

Graph 2

NICOTINE DELIVERY: TITL vs Philip Morris
Market Sample #31



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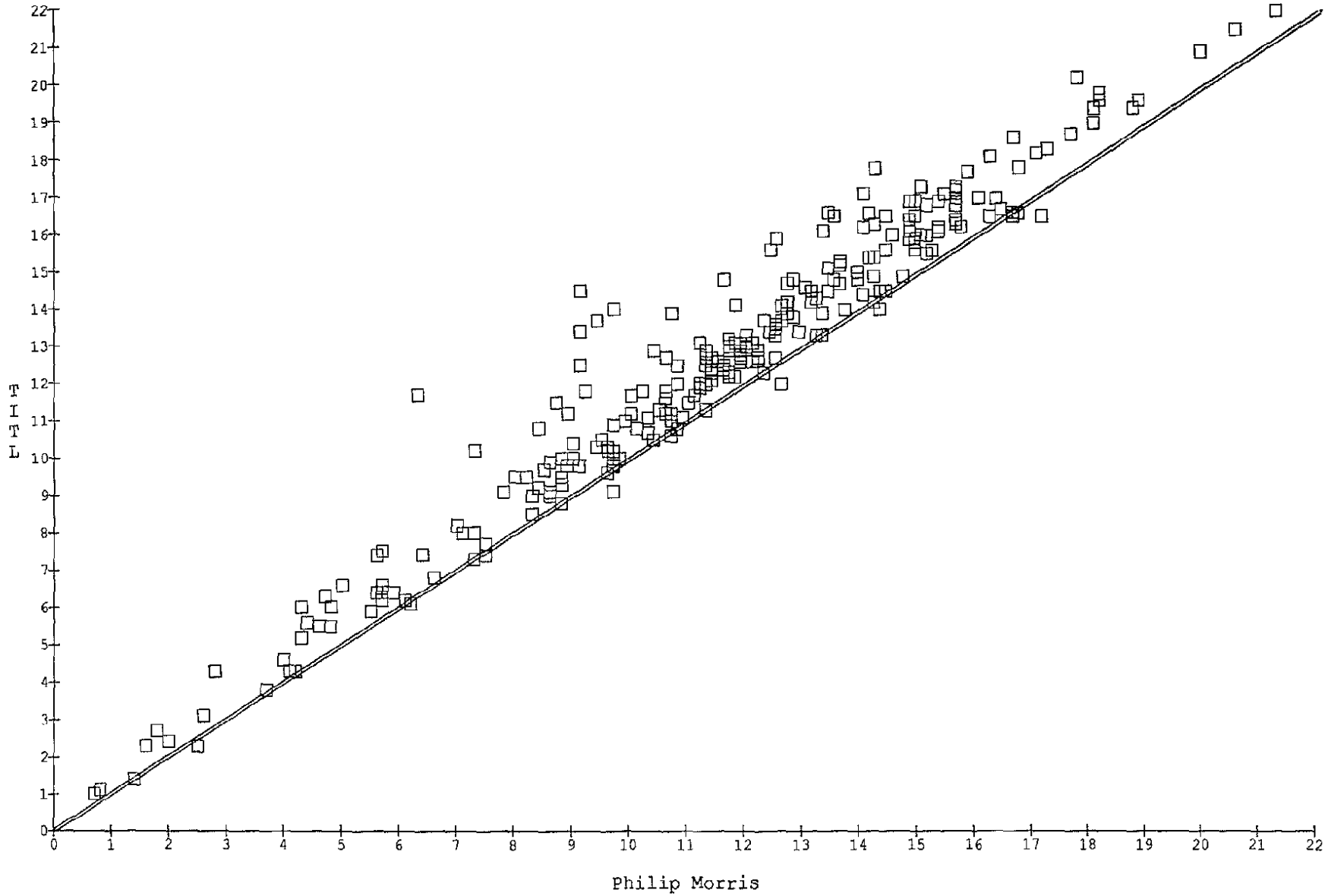
Source: https://www.industrydocuments.ucsf.edu/docs/hsvl0001

Graph 3

CO DELIVERY: TITL vs Philip Morris
Market Sample #31



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